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the following: Gold medal for the best display of microscopes and accessories; silver medals for the best display of optical apparatus, of magic lantern and apparatus for projection, and of microscope slides in set of not less than fifty slides; and honorable mention for the best microscope stand, best object glass, and best polarizing apparatus.

The Rochester Microscopical Society, after an existence of two years, during which time it became the largest organization of the kind in this country, has drawn around it sections in other departments of science, and has thus given origin to a new society of wider scope, the Rochester Academy of Science, of which it will hereafter be a section. The recent annual reception of the new academy was one of the largest and best of such entertainments that have been given in the country.

The ninth annual reception of the San Francisco Microscopical Society was distinguished by the scientific value of the objects selected for exhibition, and by the large and appreciative assemblage of guests. The concourse of friends was said to be the largest that has ever attended a reception of the society.

The exhibition of the Wellesley College Microscopical Society, was remarkable for the thorough scientific character and direct educational value of the exhibits. The microscopical work at this institution is evidently well planned and well executed.

The thirteenth annual field-meeting of the Troy Scientific Association, held at Trenton Falls, N. Y., was one of the most successful out-of-town meetings ever held by this society. A large and distinguished party of members and friends enjoyed the rare social advantages and scientific opportunities of the trip.

The Oneida County Microscopical Society has been organized, under the presidency of Professor A. H. Chester. It meets at Utica, N. Y.

The American Postal Microscopical Club has just completed the first year's work since reorganization. Postal troubles are no longer experienced, and with rare exceptions the working of the circuits has been satisfactory. The boxes have been called in for the summer, but will be started again in September or October.

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## SCIENTIFIC NEWS.

— A remarkable cave has been discovered in the Santa Rita mountains, Arizona. For several years the existence of a curious cave near Graterville has been known to the miners of the vicinity, but the difficulty of thorough exploration has deterred many from visiting it, and half of its wonderful extent is as yet unknown. From P. J. Coyne, a well-known and reliable prospector, who is in the city, in company with Mr. Johnson, a *Citizen* reporter, were gathered some interesting facts, the result of a partial exploration.

The cave, which is known by the miners as the Aztec, is located about four miles south of the Graterville placers, in a limestone ridge. Quite recently a party of miners numbering eight or ten, including Mr. Coyne, explored seventeen rooms in all, the corridors and approaches to which extended for nearly a mile from the entrance.

The cave has two entrances, which lead into an oval cavity, thence a corridor leads into a large room, and thence into a still larger. In from the latter are two smaller cavities, and these comprise the extent of former explorations. In them have been found at various times in the past relics of Indian occupation, including arrows and skeletons. In one place several Indian skeletons were found in a depression in the floor of the cave, evidently fashioned by human hands. This latter room is described as being of marvelous beauty. It is irregular in shape, and is full of all the various forms which the action of lime has the power to create. In one of these rooms is a group of almost perfect statuary. It consists of a large block of limestone in the shape of a man, woman and child, the man being in the center, and also having the closest resemblance to humanity. The head is especially like that of a man, having the features almost distinct and surmounted by a hat. A short distance away from the group, in the flickering candlelight, the illusion is said to be absolutely perfect. At this point the cave discloses the strange feature of being two-storied, to reach the lower rooms of which it was necessary to descend by means of ropes. Here the extent of the old exploration cease, and the adventurers had to be careful lest some new and strange feature of the cave cause them trouble. In one of a group of three lower rooms was found a huge stalactite, which was instinctively called Pompey's Pillar. It is three feet in diameter at the base, and lessens gracefully in size to the roof of the cave, thirty feet high. This is probably 600 feet below the surface.

From the rooms last mentioned a corridor leads to a very large and irregular cavity, and from this small corridors lead to very beautiful rooms, which were given the names of different members of the exploring party. The one named for Mr. Coyne is the largest in the cave. From what was called "Hale's room" the party followed a steeply inclined tunnel seventy-five or eighty feet long, which terminates in a large abyss sixty or seventy feet in diameter. After lowering one of the party down the perpendicular sides from the mouth of the tunnel as far as the remaining rope would permit—about seventy feet—and failing to find bottom, the explorers named it the "bottomless pit."—*Tucson Citizen*.

— What is equivalent to a well sustained, energetic and truly scientific biological survey of Illinois, is now being carried on by the Director of the State Laboratory of Natural History, at Normal, Illinois. The appropriations for the year ending June 30, 1880, were \$4000, and when it is remembered that the State has

besides a salaried entomologist, it must be conceded that Illinois is leading all the States in the Union in biological work well calculated to elevate, educate and inform the masses. Professor Forbes' able contributions, as well as those of his assistants, have from time to time been noticed in this journal. He is now carrying on the field work, the State being divided into four or five regions. In the appropriation bill passed for the coming year, special provision is made for field work in zoölogy, for field work in botany, for the supply of series of the plants and animals of the State, to the State Museum, the State educational institutions and the public high schools, for the investigation of the food of birds, of the food of fishes and of the parasitic plants and animals of the State, for the improvement of the library and for the publication of bulletins of original work. The laboratory has accumulated the largest collection of fungi in the Western States, the collection embracing 550 species of Illinois, 1000 United States species and 1500 species foreign fungi.

Our readers will see that these subjects are so distributed as to cover directly and indirectly nearly the whole field of the natural history of Illinois.

— The Zoölogical Society of London has, we learn from *Nature*, established an insectarium, or series of rooms for rearing insects in captivity. The building for this purpose is constructed of iron and glass on three sides, with a brick back to it; the cases containing the insects are arranged on stands all round the building, and also occupy two tables in the center. The cases used for the principal specimens are formed of zinc plates. The upper part of these is glazed on all four sides, the top being formed of perforated zinc, so as to admit the air. The larger cases in the front row measure about 24 inches in breadth by 18 in depth, and are 32 inches in height. The cases in the opposite row are of similar construction, but rather smaller in dimensions. The whole series of insects already on exhibition last spring comprised about fifty species, among them the *Cecropia* moth and *Samia gloveri* of the United States. Every specimen in the insectarium is distinctly labeled, and over each of the principal cases is fixed a glazed box, in which are placed preserved specimens of the various stages of metamorphosis of the insect exhibited in the case beneath.

— The tendency in our colleges is more and more towards the cultivation of the sciences of observation, to found separate chairs of natural history, and not to require a single professor, as of old, to teach physics and chemistry, as well as geology and biology. In proof of this statement, we notice that Hon. John P. Howard has endowed a professorship of natural history in the University of Vermont. The fund of \$50,000 thus given to be applied in part for museum and library purposes. At Brown University, Mr. W. W. Bailey has been appointed Olney professor

of natural history, the duties being instruction in botany. A generous friend of the University is also providing a roomy laboratory, lecture room, study and store room for the use of the professor of zoölogy and geology. At Bowdoin College, Mr. Leslie A. Lee has been appointed professor of geology and biology. Dr. S. F. Clarke, late Fellow of Johns Hopkins University, has been appointed professor of natural history at Williams College; an appointment for which the College is to be congratulated.

— Professor Cope's expedition to Paraguay, known as the American Naturalist Expedition, left New York for Para, May 1st. The survey has a wide scope, covering many of the natural features of the regions to be examined. It is under the direction of Mr. Herbert H. Smith, formerly of the Geological Survey of Brazil, under Professor C. F. Hartt, and the author of a scientific volume on Brazil, published by the Scribners. The expedition is the individual effort of Professor Cope.

Mr. Smith will act as regular correspondent to the *NATURALIST*, describing the regions explored. We anticipate that his notes on the fauna and flora will be particularly interesting. The survey is fully equipped with means to preserve a full supply of material, which will be utilized upon reaching Philadelphia, and will throw much light on some little known regions of South America.

— Holt & Co., of New York, have in press a book entitled *The Structure and Life-histories of Butterflies*, by S. H. Scudder. It relates particularly to American butterflies, and is mainly a reproduction of lectures given several years ago before the Lowell Institute. It deals with the general problems suggested by a study of the structure, development, seasons, distribution and coloring of butterflies from an evolutionary point of view, and will discuss more fully than has heretofore been attempted, the ancestry of this group of insects. Nearly three quarters of the two hundred illustrations have been prepared for the work, while the others are borrowed principally from Harris and Riley.

— A work of extensive anatomical research on the cerebellum in various animal species has been conducted recently by two Italians, Drs. Tenchini and Staurengi. From a résumé of it in the *Archives des Sciences*, we gather that it establishes three important features as the exclusive possession of man, viz., the valves of Taria, a new tubercle in the arch of the fourth ventricle, and the ventricle of Verga. These are considered characters of prime importance as being related to the nervous system; and with others, they show, that if the anthropoid apes are the vertebrates nearest to man, the distance between man and the ape is still very great.

— A paper was read at a recent meeting of the Chemical Society on the action of compounds inimical to bacterial life, by

Mr. W. M. Hamlet. The cultivating fluids used comprised Pasteur's fluid, beef-tea, hay-infusion, brewer's wort, and extract of meat; these were sterilized by boiling for ten minutes in Pasteur's flasks, cooled with suitable precautions, and then seeded with hay solution and the substance under examination added. Many gases, &c., were tried. Chlorine and hydric peroxide were fatal to bacteria, while chloroform, creosote, carbolic acid, salicylic acid, &c., hindered their development, but did not destroy them.

— The appointment, by President Garfield, of Hon. George B. Loring as Commissioner of Agriculture, has been regarded on all sides as peculiarly fitting. It is a new departure to have a commissioner who is not only a gentleman of broad culture, but one who sympathizes with scientific men, and will, undoubtedly, encourage, as no former commissioner has done, the development of applied botany and zoölogy, particularly entomology. As an earnest of his intentions in this direction, the commissioner has appointed Professor C. V. Riley entomologist of the department, in place of Professor Comstock, resigned.

— We learn from the *Nation* that the International Congress of Americanists will be held at Madrid, Sept. 18–22. The first day will be devoted to American geology, the history of Pre-columbian times, and the history of the discovery; the second day to archæology; the third to anthropology and ethnography; the last to linguistics and palæography. The general secretary is Captain C. F. Duro Sauco 13 duplicado, Madrid. The programme, list of officers, delegates, etc., has been issued by M. G. Hernandez, of Madrid.

— We have received Bulletin 4 of the Illinois State Laboratory of Natural History, comprising a catalogue of the birds of Illinois, by R. Ridgway. This list will be of use in the more important biological work carried on in this institution, which is a great credit to the state, and will do much to turn naturalists away from "species work" and induce them to study the relations of animals to one another, and to their physical surroundings.

— The International Geological Congress is to hold its second session at Bologna, commencing on Sept. 29, 1881. The King of Italy has offered a prize of 5000 francs for the best suggestion for an international scale of colors and conventional signs practically applicable to geological maps and sections, including those of small scale. The competitive papers were demanded by the end of May.

— Near Lützen, in Saxony, a number of sepulchral urns have been discovered in a brickfield, and accompanying them skulls and bones, showing that cremation and burial were both practiced by the depositors. Professor Virchow says that one of the skulls he has examined resembles the Neanderthal skull, but differs

sufficiently to form a type of its own. No ornaments were discovered.

— Mr. Charles Darwin's work entitled "The Formation of vegetable Mold through the action of Worms, with Observations on their Habits," and the life and letters of the late Sir Charles Lyell, Bart., edited by his sister-in-law, Mrs. Lyell, are announced by Mr. Murray.

— It was probably before Carlyle mollified his views concerning evolution and science, owing possibly to the influence of his friend, Professor Tyndall, that he paid his respects to the theory in the following terms: "I have no patience whatever with these Gorilla Damnifications of Humanity!"

— The Italian government is about to send out a deep-sea expedition to explore the Mediterranean, Prof. Giglioli, the eminent zoölogist of Florence, having charge of the biological part of the work.

— The translations of Nägeli and Schwendener's Treatise on the Microscope is approaching completion. It will be issued by Sonnenschein & Allen, of London.

— English science has met with a great loss in the untimely death of Professor George Rolleston, F. R. S., of Oxford University, who died at his home June 16th, at the comparatively early age of 51 years. Professor Rolleston was, to those who knew him, a most genial, attractive and cultivated man, aside from his thorough scientific spirit and training. He was the author, besides of a number of anatomical and anthropological papers and memoirs, of a comparative anatomy for students, entitled, "Forms of Animal Life." Professor Rolleston first introduced, if we mistake not, the plan of giving detailed accounts, with excellent illustrations, of typical forms of animal life. The death of Professor Rolleston will be deeply mourned by those American scientists who were fortunate enough to have met him at his museum and also at his pleasant English home.

— Another English naturalist, Mr. John Blackwall, died May 11, at the great age of ninety-two. He was the author of a beautifully illustrated folio work on British spiders, and of a number of zoölogical papers.

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## PROCEEDINGS OF SCIENTIFIC SOCIETIES.

DAVENPORT ACADEMY OF NATURAL SCIENCES.—Annual Meeting. Our report of the annual meeting of this flourishing society has been delayed for want of space. We give extracts from President Pratt's report as to the part taken by the Society in American archæology, especially as related to the mound-builders.

The mound-builders were very numerous throughout the Mississippi valley. They dwelt mostly, if not exclusively, in the